Effects of Sediment Removal on an Offshore Benthic Community

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Placement of sand on coastal beaches (nourishment) has been used to reduce losses from storm erosion and barrier island movement, with sediment coming from a variety of potential sources including offshore borrow areas. We examined recovery of benthic fauna in an offshore borrow area as well as long-term patterns of community dominance and responses to storm disturbance. Benthic fauna were sampled in a borrow and a control site 2 years before and 2 years after sediment removal (1995-1999). Video surveys from an ROV were used to examine sedimentation effects on hardbottom habitats. Less than 30% of taxa exhibited differences between borrow and control sites at any time and only 2 of 29 numerically dominant species showed emergent site differences after sediment removal. Strongest effects were related to temporal variations in abundance with some species exhibiting seasonal variations in abundance, some taxa exhibiting single periods of higher abundance, and other taxa exhibiting more variable patterns. Three hurricanes affected the sites during the study, but there was little evidence of acute changes associated with storm disturbance. Shifts in abundance corresponding to the time of sediment removal occurred for some taxa, but were present in both borrow and control areas. The data suggest relatively quick recovery from borrow activities with interannual variability explaining more of the observed differences than sediment removal effects. Limited long-term effects of sediment removal in this instance may be related to timing of activities (in fall and winter before peak infaunal recruitment), limited area affected, and the opportunistic nature of many of the infaunal species.